NVLAP LAB CODE 200707-0

ETSI EN 301 489-1 V1.6.1 (2005-09)
ETSI EN 301 489-6 V1.2.1 (2002-08)

MEASUREMENT AND TEST REPORT

For

Shenzhen Guo Wei Electronics Co. Ltd.

No.68 Guo Wei Road, Liantang Industrial District, Shenzhen, Guangdong, P.R.C

Model: DECT48-C07

Report Type: Original Report	**Product Type:** DECT Cordless Phone
Test Engineer:	Bruce Zhang
Report Number:	RSZ08112504-2Base
Report Date:	2009-01-16
Reviewed By:	Merry Zhao EMC Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone, Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP*, NIST, or any agency of the Federal Government.
* This report may contain data that are not covered by the NVLAP accreditation and are marked with an asterisk " * ".

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Shenzhen Guo Wei Electronics Co. Ltd.*'s product, model number: *DECT48-C07* or the "EUT" as referred to in this report is a *DECT Cordless Phone*, which measures approximately: 13.8 cm L x 11.8 cm W x 7.5 cm H, rated input voltage: DC 7.5V Adapter.

Adapter Information:
Model: SW-075030EU;
Input: 100-240VAC ~ 50/60Hz 0.2A Max;
Output: 7.5VDC---500mA

** All measurement and test data in this report was gathered from production sample serial number: 0811070 (Assigned by BACL, Shenzhen). The EUT was received on 2008-08-11.*

Objective

The following test report is prepared on behalf of *Shenzhen Guo Wei Electronics Co. Ltd.* in accordance with ETSI EN 301 489-1 V1.6.1 (2005-09) Plus Provisions of ETSI EN 301 489-6 V1.2.1 (2002-08), Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 6: Specific conditions for Digital Enhanced Cordless Telecommunications (DECT) equipment.

The objective of the manufacturer is to determine compliance with ETSI EN 301 489-1 V1.6.1 (2005-09) Plus Provisions of ETSI EN 301 489-6 V1.2.1 (2002-08).

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All measurements contained in this report were conducted with ETSI EN 301 489-1 V1.6.1 (2005-09).

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp.(Shenzhen) to collect test data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on November 04, 2004. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0).



The current scope of accreditations can be found at
http://ts.nist.gov/Standards/scopes/2007070.htm

SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

EUT Exercise Software

N/A.

Special Accessories

The special accessories were supplied by Bay Area Compliance Laboratories Corp. (Shenzhen).

Equipment Modifications

No modifications were made to the unit tested.

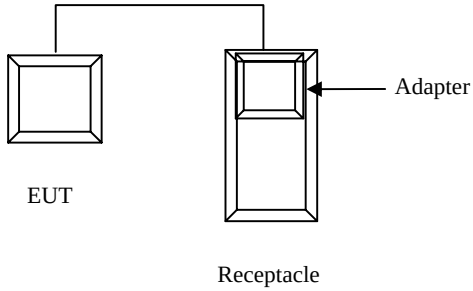
Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
Ke Wang	Telephone Exchange	TC-104L	N/A	DoC
GuoWei	Telephone	HCD1698	N/A	DoC
Brüel & Kjær	Telephone Test hand	4602B	2174439	N/A

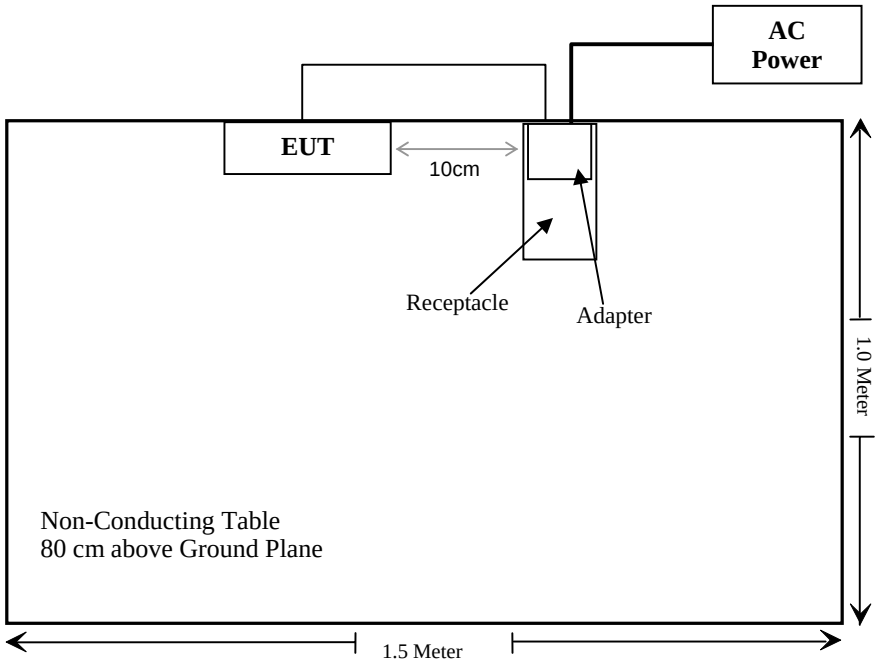
External I/O Cable

Cable Description	Length (m)	From Port	To
Unshielded Detachable Power Cable	2.0	EUT	Adapter

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

ETSI EN 301 489-6 V1.2.1 (2002-08)	Description of Test	Result
§7.1	Reference to clauses EN 301 489-1 §8.4 AC mains power input/output ports	Compliant
	Reference to clauses EN 301 489-1§8.3 DC power input/output ports	N/A
	Reference to clauses EN 301 489-1 §8.2 Enclosure of ancillary equipment measured on a stand alone basis	N/A
	Reference to clauses EN 301 489-1 §8.5 Harmonic current emissions (AC mains input port)	N/A
	Reference to clauses EN 301 489-1 §8.6 Voltage fluctuations and flicker (AC mains input port)	Compliant
	Reference to clauses EN 301 489-1§8.7 Telecommunication ports	Compliant
§7.2	Reference to clauses EN 301 489-1 §9.2 Radio frequency electromagnetic field (80 MHz to 1 000 MHz and 1 400 MHz to 2 000 MHz)(EN 61000-4-3)	Compliant
	Reference to clauses EN 301 489-1 §9.3 Electrostatic discharge (EN 61000-4-2)	Compliant
	Reference to clauses EN 301 489-1§9.4 Fast transients, common mode (EN 61000-4-4)	Compliant
	Reference to clauses EN 301 489-1§9.5 Radio frequency, common mode (EN 61000-4-6)	Compliant
	Reference to clauses EN 301 489-1 §9.6 Transients and surges in the vehicular environment (ISO 7637-2)	N/A
	Reference to clauses EN 301 489-1§9.8 Surges (EN 61000-4-5)	Compliant
	Reference to clauses EN 301 489-1§9.7 Voltage dips and interruptions (EN 61000-4-11)	Compliant

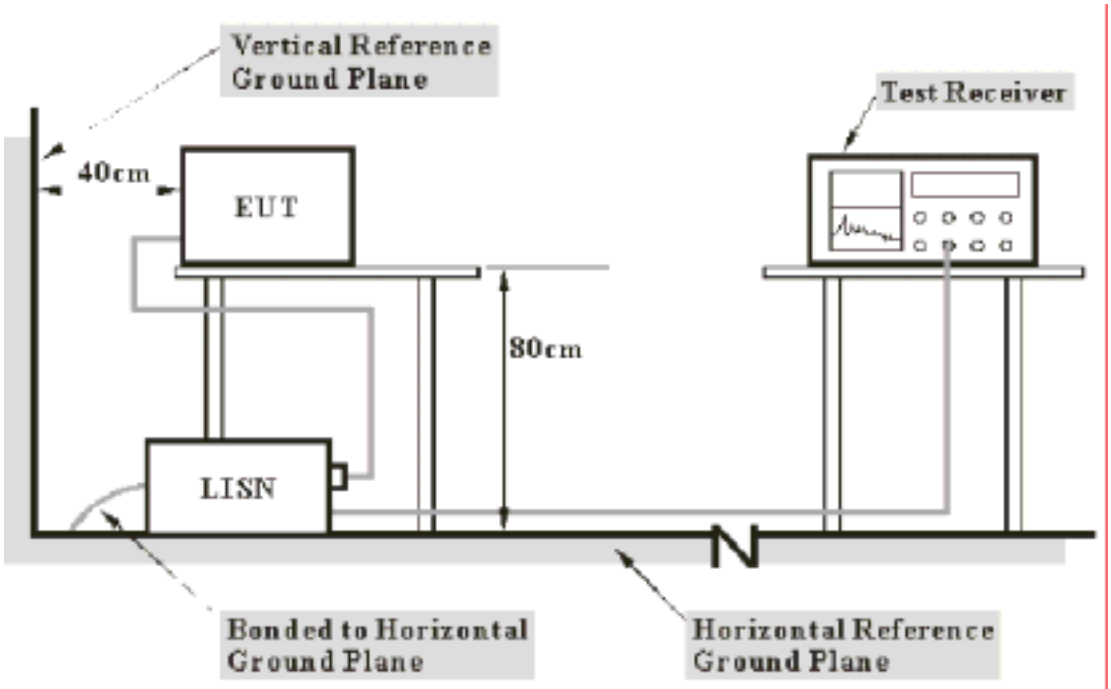
ETSI EN 301 489-6 V1.2.1 (2002-08) §7.1 - CONDUCTED EMISSIONS

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is ±2.4 dB.

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per EN 301 489-1 measurement procedures. The specification used was with the EN 301 489-1 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The adapter was connected to 230V/50Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	***IFBW***
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Com-Power	L.I.S.N.	LI-200	12005	N/A	N/A
Com-Power	L.I.S.N.	LI-200	12208	N/A	N/A
Rohde & Schwarz	EMI Test Receiver	830245/006	DE25330	2008-03-25	2009-03-25
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2008-03-25	2009-03-25

***** Com-Power's LISN were used as the supporting equipment.
*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Test Results Summary

According to the recorded data in following table, the EUT complied with the ETSI EN 301 489-1, with the worst margin reading of:

11.50 dB at **0.155 MHz** in the **Line** conductor mode

19.50 dB at **0.330 MHz** in the **RJ11 Port**

Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

The testing was performed by Bruce Zhang on 2009-01-13.

Test Mode: Talking (AC Port)

Line Conducted Emissions				EN 301 489-1/EN 55022	
Frequency (MHz)	**Amplitude (dBµV)**	**Detector (QP/AV)**	**Conductor (Line/Neutral)**	**Limit (dBµV)**	**Margin (dB)**
0.155	54.20	QP	Line	65.70	11.50
0.850	43.80	QP	Line	56.00	12.20
1.275	43.00	QP	Neutral	56.00	13.00
4.275	42.80	QP	Line	56.00	13.20
0.910	42.50	QP	Neutral	56.00	13.50
0.310	36.30	AV	Line	50.00	13.70
0.310	46.20	QP	Line	60.00	13.80
0.305	45.20	QP	Neutral	60.10	14.90
0.820	28.50	AV	Line	46.00	17.50
0.170	47.10	QP	Neutral	65.00	17.90
4.030	23.70	AV	Line	46.00	22.30
0.305	26.10	AV	Neutral	50.10	24.00
0.155	31.20	AV	Line	55.70	24.50
8.630	34.60	QP	Neutral	60.00	25.40
17.915	22.50	AV	Line	50.00	27.50
0.910	18.20	AV	Neutral	46.00	27.80
1.280	18.10	AV	Neutral	46.00	27.90
17.915	31.20	QP	Line	60.00	28.80
10.750	29.70	QP	Line	60.00	30.30
17.915	19.50	AV	Neutral	50.00	30.50
17.915	28.80	QP	Neutral	60.00	31.20
10.750	18.20	AV	Line	50.00	31.80
0.170	20.70	AV	Neutral	55.00	34.30
8.530	12.40	AV	Neutral	50.00	37.60

Test Mode: Talking (RJ11 Port)

Line Conducted Emissions				EN 301 489-1/EN 55022	
Frequency (MHz)	**Amplitude (dBμV)**	**Detector (QP/AV)**	**Test Port**	**Limit (dBμV)**	**Margin (dB)**
0.330	59.40	QP	RJ11	78.90	19.50
0.300	59.50	QP	RJ11	79.70	20.20
1.240	53.70	QP	RJ11	74.00	20.30
3.940	53.70	QP	RJ11	74.00	20.30
0.300	49.30	AV	RJ11	69.70	20.40
2.830	53.20	QP	RJ11	74.00	20.80
1.870	50.70	QP	RJ11	74.00	23.30
1.240	40.50	AV	RJ11	64.00	23.50
1.860	37.70	AV	RJ11	64.00	26.30
3.950	37.20	AV	RJ11	64.00	26.80
2.820	36.60	AV	RJ11	64.00	27.40
0.330	41.00	AV	RJ11	68.90	27.90

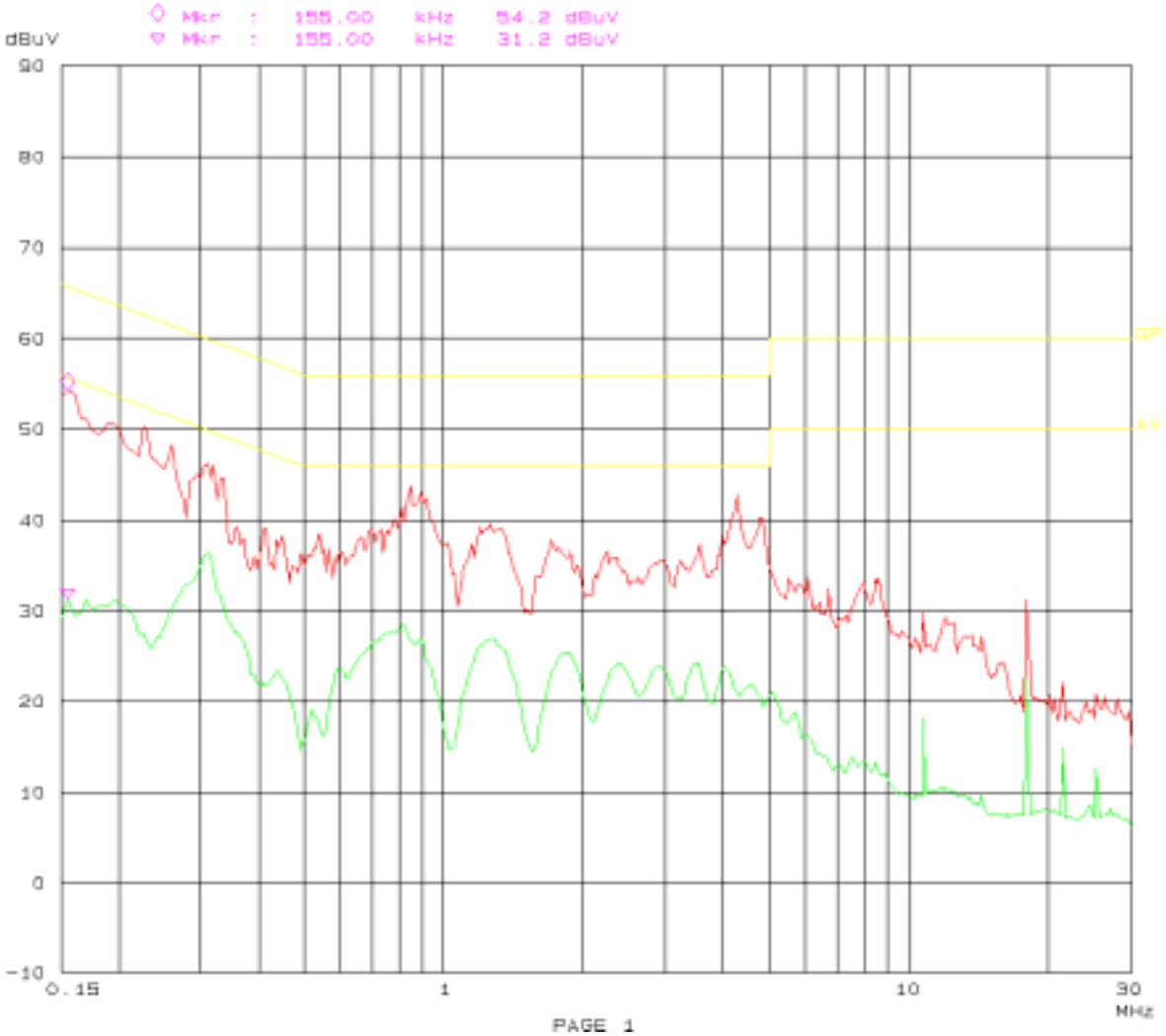
Plot(s) of Test Data

Plot(s) of Test Data is presented hereinafter as reference.

Conducted Emission
EN 301489

13. Jan 09 08:55

EUT: DECT Cordless Phone M/N: DECT48-C07
Manuf: Guowei
Op Cond: Talking
Operator: Bruce
Test Spec: AC 230V 50Hz L
Comment: Temp: 25 Humc 56%
BACL

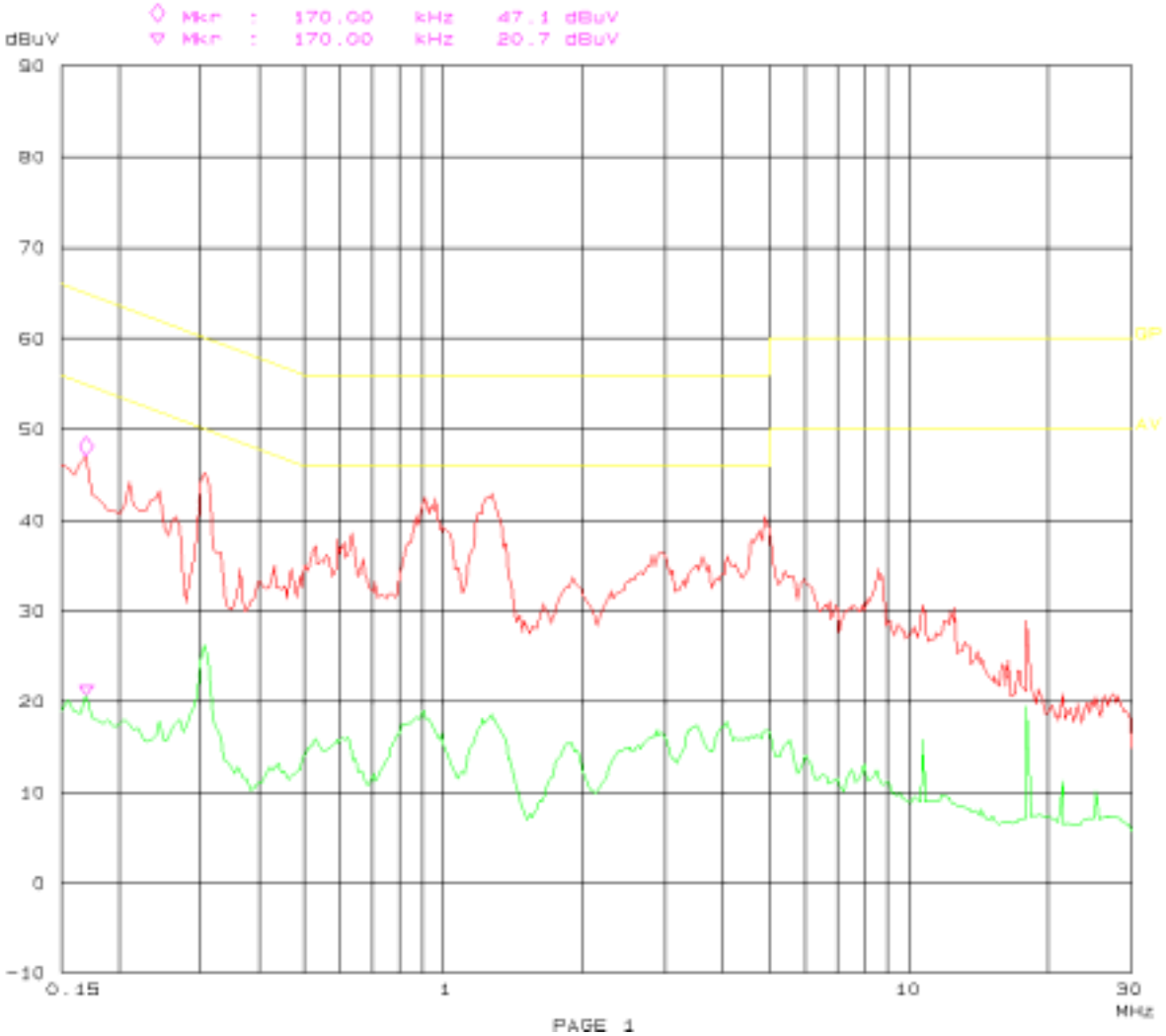


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Conducted Emission
EN 301489

13. Jan 09 09:34

EUT: DECT Cordless Phone M/N: DECT48-C07
Manuf: Guowei
Op Cond: Talking
Operator: Bruce
Test Spec: AC 230V 50Hz N
Comment: Temp: 25 Humc 56%
BACL

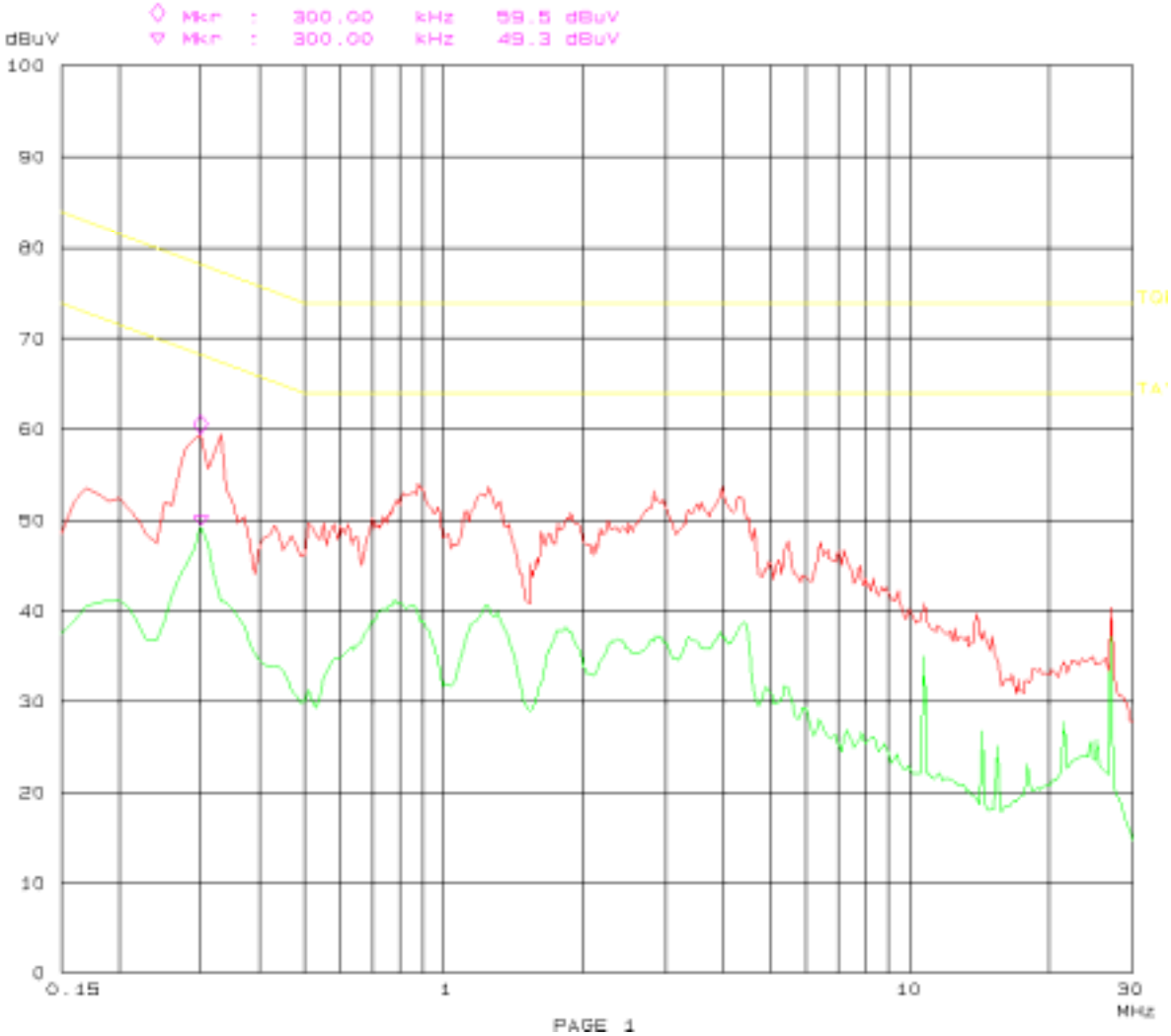


PAGE 1

Conducted Emission
EN 301489

13. Jan 09 09:51

EUT: DECT Cordless Phone M/N: DECT48-C07
Manuf: Guowei
Op Cond: Talking
Operator: Bruce
Test Spec: AC230V/50Hz Aj11
Comment: Temp: 25 Humc 56%
BACL



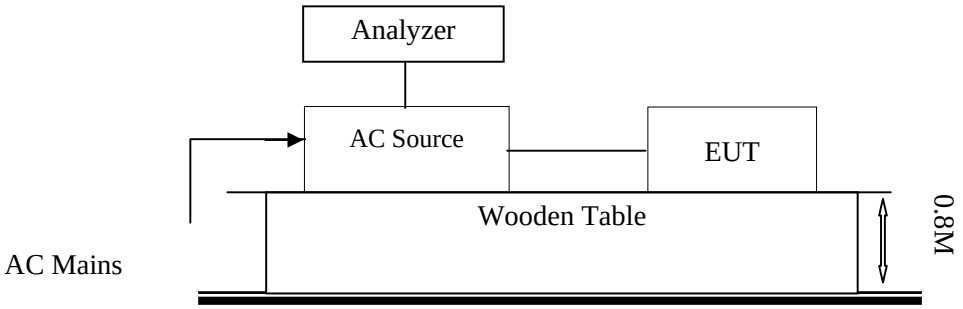
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ETSI EN 301 489-6 V1.2.1 (2002-08) §7.1 - VOLTAGE FLUCTUATION AND FLICKER

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM Test	Harmonic/Flicker Analyzer	DPA500	303278	2008-03-25	2009-03-25
EM Test	AC Source	ACS500	303276	2008-03-25	2009-03-25

Test System Setup



Test Standard

ETSI EN 301 489-1 V1.6.1/EN 61000-3-3: 1995+A1: 2001+A2: 2005

Test Data and Setup Photo

Date of test:	15:19 11.Aug 2008
Tester:	Bruce Zhang
Standard used:	EN 61000-3-3 Flicker
Short time (Pst):	10 min
Observation time:	10 min (1 Flicker measurement)
Flickermeter:	230V / 50Hz
Customer:	Shenzhen Guo Wei Electronics Co. Ltd.
E. U. T.:	DECT Cordless Phone
Model:	DECT48-C07
Test Mode:	Talking

Maximum Flicker results

	EUT values	Limit	Result
Pst	0.028	1.00	PASS
Plt	0.028	0.65	PASS
dc [%]	0.005	3.30	PASS
dmax [%]	0.173	4.00	PASS
dt [s]	0.000	0.50	PASS



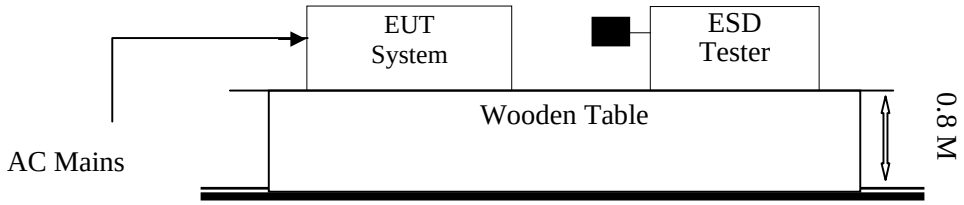
Test Set up Photo

ETSI EN 301 489-6 V1.2.1 (2002-08) §7.2 - ELECTROSTATIC DISCHARGE

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM Test	ESD Tester	Dito	302105	2008-09-27	2009-09-26

Test System Setup



Remark: ■ is the tip of the electrode

EN 61000-4-2 specifies that a tabletop EUT shall be placed on a non-conducting table which is 80 centimeters above a ground reference plane and that floor mounted equipment shall be placed on a insulating support approximately 10 centimeters above a ground plane. During the tests, the EUT is positioned over a ground reference plane in conformance with this requirement.

For tabletop equipment, a 1.5 by 1.0-meter metal sheet (HCP) is placed on the table and connected to the ground plane via a metal strap with two 470 k Ohms resistors in series. The EUT and attached cables are isolated from this metal sheet by *0.5-millimeter* thick insulating material. A Vertical Coupling Plane (VCP) grounded on the ground plane through the same configuration as in the HCP is used.

Test Standard

ETSI EN 301 489-1 V1.6.1 / EN 61000-4-2: 1995+A1: 1998+A2: 2001
Test Level 3 for Air Discharge at ±8 kV
Test Level 2 for Contact Discharge at ±4 kV

Test Level

Level	Test Voltage Contact Discharge (±kV)	Test Voltage Air Discharge (±kV)
1.	2	2
2.	4	4
3.	6	8
4.	8	15
X.	Special	Special

Performance criterion: B

Test Procedure

Air Discharge:

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

Contact Discharge:

All the procedure shall be same as Section 8.3.1 of EN 61000-4-2, except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

Indirect discharge for horizontal coupling plane

At least 20 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode positions vertically at a distance of 0.1m from the EUT and with the discharge electrode touching the coupling plane.

Indirect discharge for vertical coupling plane

At least 20 single discharges shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

Test Data and Setup Photo

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

The testing was performed by Bruce Zhang on 2009-01-13.

Test Mode: Talking (AC Port)

Table 1: Electrostatic Discharge Immunity (Air Discharge)

EN 61000-4-2 Test Points	Test Levels									
	-2 kV	+2 kV	-4 kV	+4 kV	/	/	-8 kV	+8 kV	-15kV	+15kV
Slot (10 Points)	A	A	A	A	/	/	A	A	/	/
Button (2 Points)	A	A	A	A	/	/	A	A	/	/
Port (8 Points)	A	A	A	A	/	/	A	A	/	/

Table 2: Electrostatic Discharge Immunity (Direct Contact)

EN 61000-4-2 Test Points	Test Levels									
	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV	-15kV	+15kV
/	/	/	/	/	/	/	/	/	/	/

Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP)

EN 61000-4-2 Test Points	Test Levels									
	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV	-15kV	+15kV
Front Side	A	A	A	A	/	/	/	/	/	/
Back Side	A	A	A	A	/	/	/	/	/	/
Left Side	A	A	A	A	/	/	/	/	/	/
Right Side	A	A	A	A	/	/	/	/	/	/

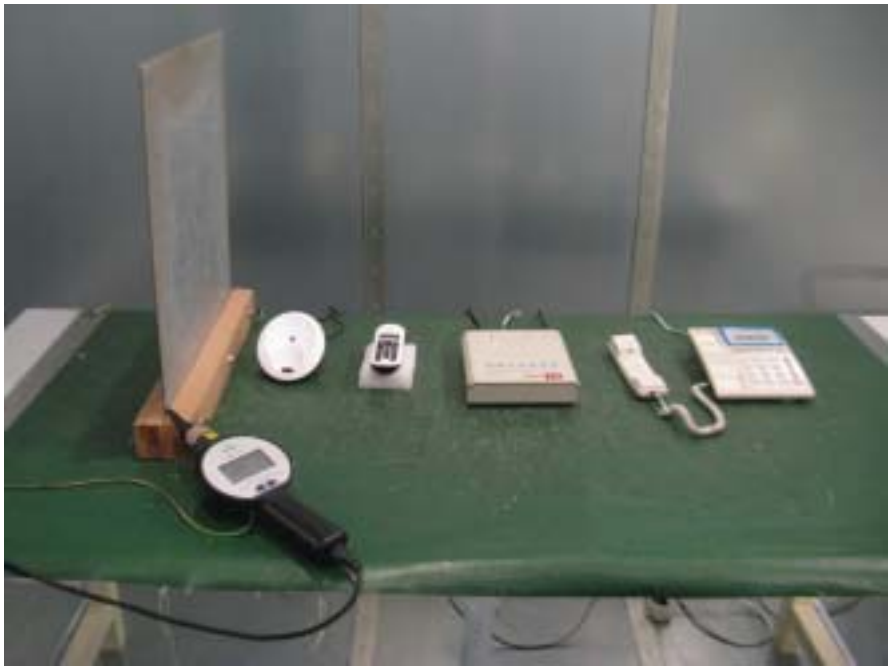
Table 4: Electrostatic Discharge Immunity (Indirect Contact VCP)

EN 61000-4-2 Test Points	Test Levels									
	-2 kV	+2 kV	-4 kV	+4 kV	-6 kV	+6 kV	-8 kV	+8 kV	-15kV	+15kV
Front Side	A	A	A	A	/	/	/	/	/	/
Back Side	A	A	A	A	/	/	/	/	/	/
Left Side	A	A	A	A	/	/	/	/	/	/
Right Side	A	A	A	A	/	/	/	/	/	/

Air Discharge



Indirect Contact



Test Setup photos

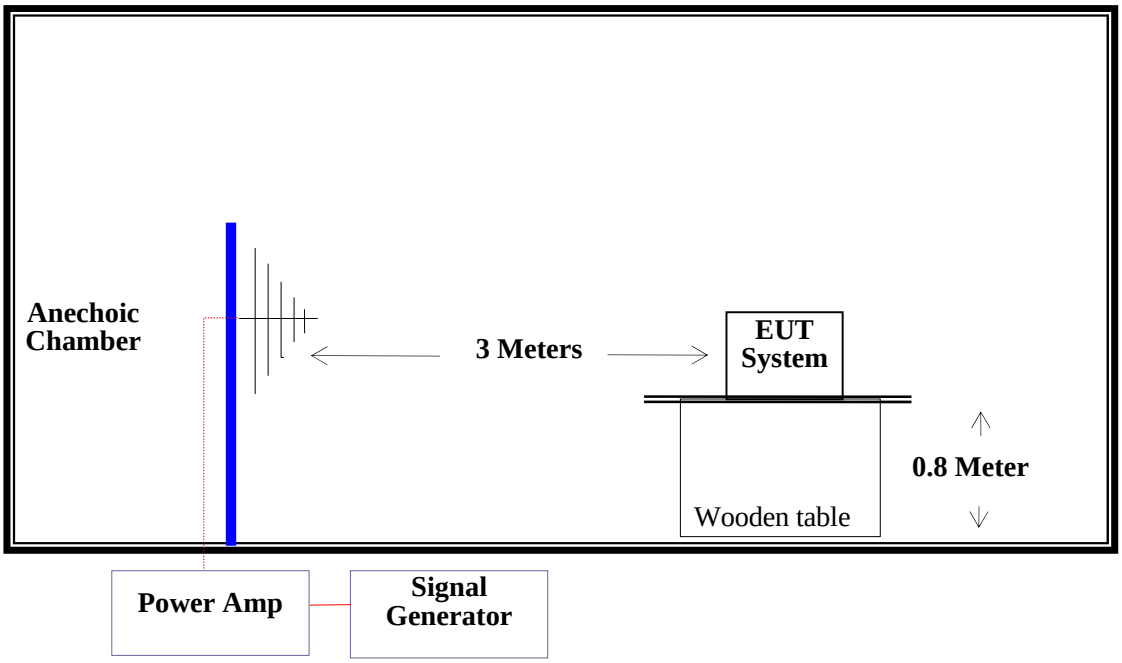
ETSI EN 301 489-6 V1.2.1 (2002-08) §7.2 - RF ELECTROMAGNETIC FIELD (80 MHz to 1000 MHz) AND (1400 MHz to 2000 MHz)

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Amplifier Research	Amplifier	150W1000	302657	2008-11-15	2009-11-15
Amplifier Research	Field Meter	FM5004	302149	2008-11-10	2009-11-09
Amplifier Research	Sensor	FP5000	301825	2008-02-22	2009-02-22
HP	Signal Generator	8648C	3426A01345	2008-01-29	2009-01-29
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2008-03-11	2009-03-11
HP	Synthesized Sweeper	HP 8341B	2624A00116	2008-11-7	2009-11-6
Sunol Sciences	Horn Antenna	DRH-118	A052604	2008-09-25	2009-09-25
Brüel & Kjær	Ear Simulator	4185	2190351	2008-05-30	2009-05-30
Brüel & Kjær	Telephone Test Head	4602B	2174439	2008-05-30	2009-05-30
LISTEN, Inc.	Microphone Power Supply	N/A	1199-PS165	2008-05-30	2009-05-30
Brüel & Kjær	Measuring Amplifier	2610	SA0252	2008-05-30	2009-05-30

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test System Setup



Test Standard

ETSI EN 301 489-1 V1.6.1 / EN 61000-4-3: 2006
Test Level 2 at 3V / m
Test Levels and Performance Criterion

Test Level

Level	Field Strength (V/m)
1.	1
2.	3
3.	10
X.	Special

Performance Criterion: A* (***Note: "A"** stand for, the speech output signal level shall be at least 35 dB less than the reference level recorded before the start of the test. This shall be verified by the procedure in EN 301 489-6 V1.2.1 clause 5.3.2.)

Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above the ground. The EUT is set 3 meters away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarizations of the antenna are set on test. Each of the four sides of EUT must be faced this transmitting antenna and measured individually.
In order to judge the EUT performance, a CCD camera is used to monitor the EUT.
All the scanning conditions are as follows:

	Condition of Test	Remarks
1.	Field Strength	3 V/m (Test Level 2)
2.	Radiated Signal	Modulated
3.	Scanning Frequency	80 - 1000 MHz and 1400-2000MHz
4.	Sweeping time of radiated	0.0015 decade/s
5.	Dwell Time	1 Sec.

Test Data and Setup Photo

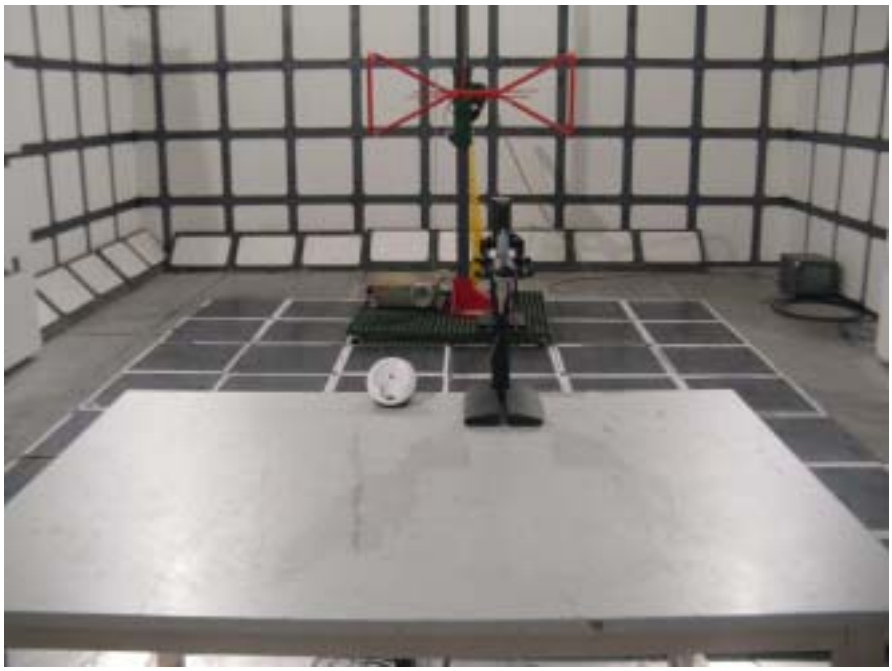
Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

The testing was performed by Bruce Zhang on 2009-01-12.

Test Mode: Talking

Frequency Range (MHz)	Front (3 V/m)		Rear (3 V/m)		Left Side (3 V/m)		Right Side (3 V/m)	
	VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
80-1000	A	A	A	A	A	A	A	A
1400-2000	A	A	A	A	A	A	A	A



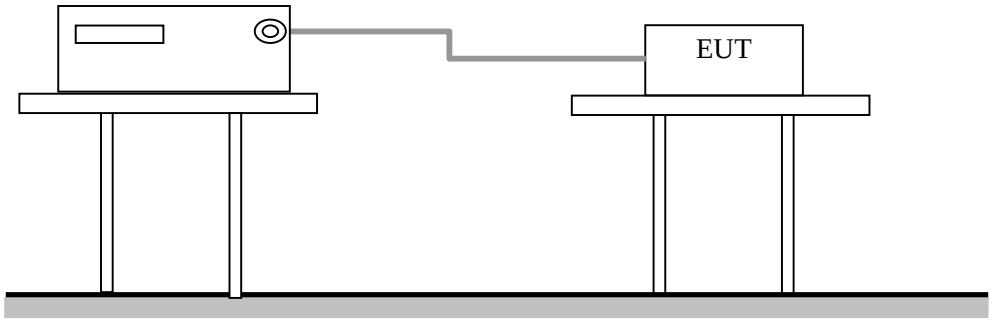
Test Setup photos

ETSI EN 301 489-6 V1.2.1 (2002-08) §7.2 - FAST TRANSIENT IMMUNITY COMMON MODE

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM Test	Ultra Compact Generator	UCS500-M4	0801-15	2008-03-25	2009-03-25
EM Test	Auto-transformer	MV2616	0403-16	2008-03-25	2009-03-25

Test System Setup



Ground Plane

Test Standard

ETSI EN 301 489-1 V1.6.1/EN 61000-4-4: 2004
Test level 2 at 1 kV

Test Level

Open Circuit Output Test Voltage ±10%		
Level	**On Power Supply Lines**	**On I/O (Input/Output) Signal data and control lines**
1	0.5 kV	0.25 kV
2	1 kV	0.5 kV
3	2 kV	1 kV
4	4 kV	2 kV
X	Special	Special

Performance Criterion: B

Test Procedure

The EUT was arranged for Power Line Coupling and for I/O Line Coupling through a capacitive clamp, where applicable. (Note: The I/O coupling test using a capacitive clamp is performed on the I/O interface cables that are longer in length than 3 meters.) A metal ground plane 2.4 meter by 2.0 meter was placed between the floor and the table and is connected to the earth by a 2.0 meter ground rod. The ground rod is connected to the test facility's electrical earth.

Test Data and Setup Photo

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

The testing was performed by Bruce Zhang on 2009-01-12.

Test Mode: Talking

EN 61000-4-4 Test Points		**Test Levels (kV)**							
		+0. 5	**-0. 5**	**+1.0**	**-1.0**	**+2.0**	**-2.0**	**+4.0**	**-4.0**
AC mains Power input ports	L1	A	A	A	A	/	/	/	/
	L2	A	A	A	A	/	/	/	/
	Earth	/	/	/	/	/	/	/	/
	L1+L2	A	A	A	A	/	/	/	/
	L1 + Earth	/	/	/	/	/	/	/	/
	L2 + Earth	/	/	/	/	/	/	/	/
	L1+L2+Earth	/	/	/	/	/	/	/	/
Signal Port	Telecommunication Port (RJ11)	A	A	/	/	/	/	/	/

AC Power:



RJ11 Port:



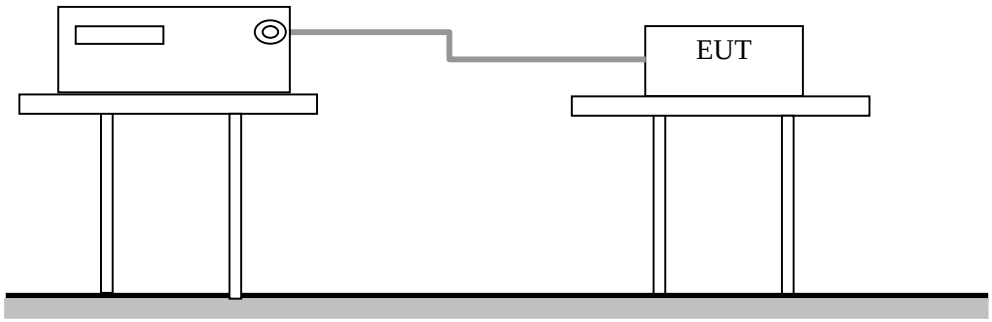
Test Setup photo

ETSI EN 301 489-6 V1.2.1 (2002-08) §7.2 - SURGES, COMMON AND DIFFERENTIAL MODE

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM Test	Ultra Compact Generator	UCS500-M4	0801-15	2008-03-25	2009-03-25
EM Test	Auto-transformer	MV2616	0403-16	2008-03-25	2009-03-25

Test System Setup



Ground Plane

Test Standard

ETSI EN 301 489-1 V1.6.1 / EN 61000-4-5: 2006
AC Port: L-N: Test level 2 at 1 kV
RJ11 Port: Line-Ground: Test level 1 at 0.5 kV

Test Level

Level	Open Circuit Output Test Voltage ±10%
1	0.5 kV
2	1 kV
3	2 kV
4	4 kV
X	Special

Performance Criterion: B

Test Procedure

1) For line to line coupling mode, provide a 0.5 kV 1.2/50us voltage surge (at open-circuit condition).
2) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
3) Different phase angles are done individually.
4) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

Test Data and Setup Photo

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

The testing was performed by Bruce Zhang on 2009-01-12.

Test Mode: Talking

Table 1: AC mains power input port

Level	Voltage	Poll	Path	Pass	Fail
1	0.5 kV	±	L-N	A	/
2	1 kV	±	L-N	A	/
3	2 kV	±	L-N, L-PE, N-PE	/	/
4	4 kV	±	L-N, L-PE, N-PE	/	/

Table 2: Unshield I/O Circuits and Lines (RJ11)

Level	Voltage	Poll	Path	Pass	Fail
1	0.5 kV	±	Line-Ground	A	/
2	1 kV	±	Line-Line, Line-Ground	/	/
3	2 kV	±	Line-Line, Line-Ground	/	/
4	4 kV	±	Line-Line, Line-Ground	/	/

AC Power:



RJ11 Port:



Test Setup photo

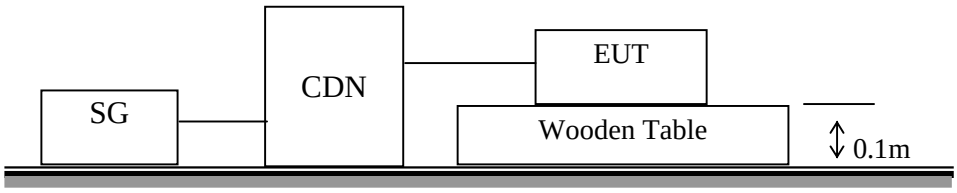
ETSI EN 301 489-6 V1.2.1 (2002-08) §7.2 - RF COMMON MODE, 0.15 MHz to 80 MHz)

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM	CDN	M3	1201-05	2008-03-25	2009-03-25
EM Test	C/S Tester	CWS500	303277	2008-10-16	2009-10-16
EM Test	Attenuator	6dB	303282	2008-11-15	2009-11-15
EM Test	Attenuator	6dB	303283	N/A	N/A
FCC	Bulk Current Injection Probe	F-120-9A	303284	2008-03-26	2009-03-26
Brüel & Kjær	Ear Simulator	4185	2190351	2008-05-30	2009-05-30
Brüel & Kjær	Telephone Test Head	4602B	2174439	2008-05-30	2009-05-30
LISTEN, Inc.	Microphone Power Supply	N/A	1199-PS165	2008-05-30	2009-05-30
Brüel & Kjær	Measuring Amplifier	2610	SA0252	2008-05-30	2009-05-30

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attested that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Setup



Test Standard

ETSI EN 301 489-1 V1.6.1/EN 61000-4-6: 2007
Test level 2 at 3 V (r.m.s.), 0.15 MHz ~ 80 MHz,

Test Level

Level	Voltage Level (r.m.s.) (V)
1	1
2	3
3	10
X	Special

Performance Criterion: A* (*Note: "A" stand for, the speech output signal level shall be at least 35 dB less than the reference level recorded before the start of the test. This shall be verified by the procedure in EN 301 489-6 V1.2.1 clause 5.3.2.)

Test Procedure

1) Let the EUT work in test mode and test it.
2) The EUT are placed on an insulating support 0.1 m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3 m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
3) The disturbance signal described below is injected to EUT through CDN.
4) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
5) The frequency range is swept from 150 kHz to 80 MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1 kHz sine wave.
6) The rate of sweep shall not exceed 1.5*10-3decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
7) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

Test Data and Setup Photo

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

The testing was performed by Burce Zhang on 2009-01-12.

Test Mode: Talking

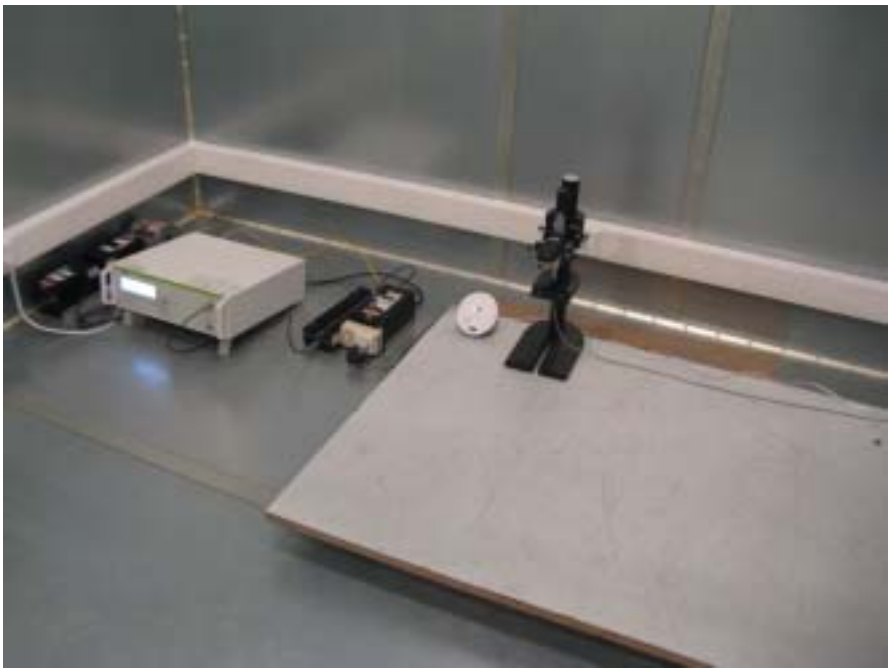
Table 1: AC mains power input port
Frequency range: 150 KHz to 80 MHz
Modulation: Amplitude 80%, 1 kHz sine wave
Test level: 3V r.m.s.

Level	Voltage Level (e.m.f.) U_0	Pass	Fail
1	1	/	/
2	3	A	/
3	10	/	/
X	Special	/	/

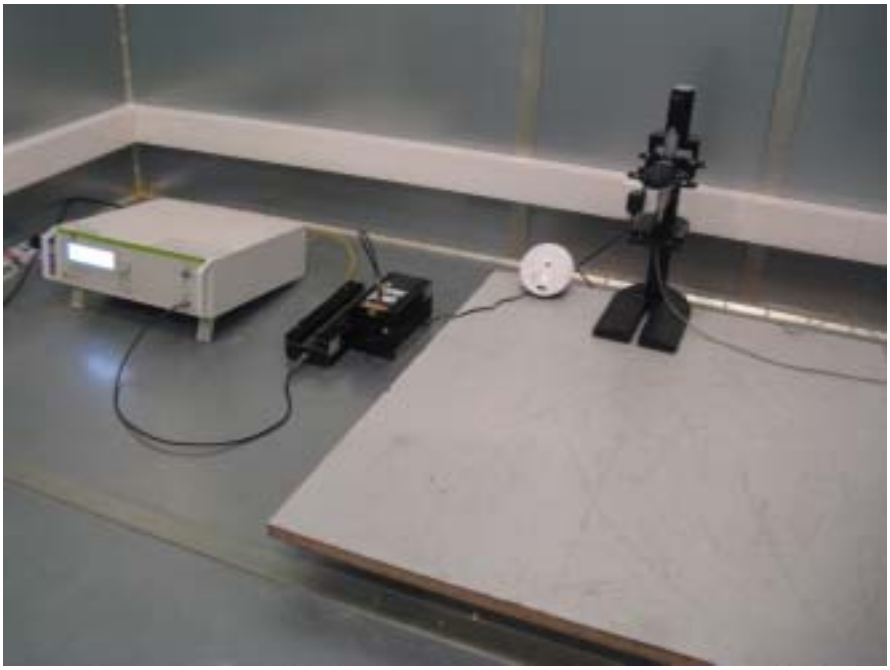
Table 2: Signal Port (RJ11)
Frequency range: 150 KHz to 80 MHz
Modulation: Amplitude 80%, 1 kHz sine wave
Test level: 3V r.m.s.

Level	Voltage Level (e.m.f.) U_0	Pass	Fail
1	1	/	/
2	3	A	/
3	10	/	/
X	Special	/	/

AC Power:



RJ11 Port:



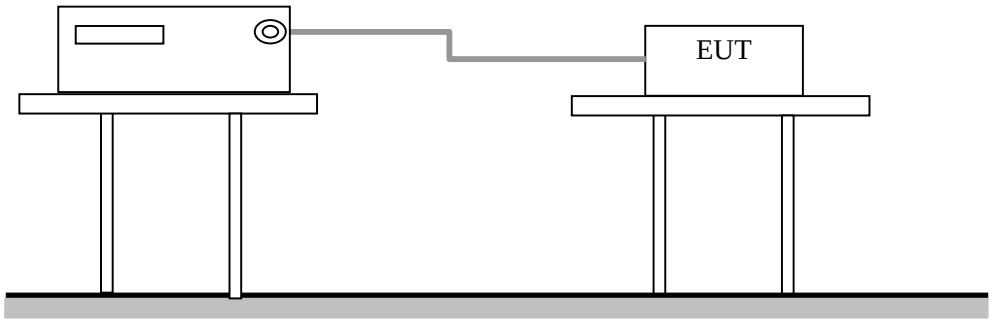
Test Setup photo

ETSI EN 301 489-6 V1.2.1 (2002-08) §7.2 - VOLTAGE DIPS AND INTERRUPTIONS

Test Equipment

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EM Test	Ultra Compact Generator	UCS500-M	303279	2008-03-26	2009-03-26
EM Test	Auto-transformer	MV2616	0403-16	2008-09-29	2009-09-29

Test System Setup



Ground Plane

Test Standard

ETSI EN 301 489-1 V1.6.1/EN 61000-4-11: 2004
Test levels and Performance Criterion

Test Level

Test Level	Voltage dip and short interruptions %UT	TD (ms)
1	30	10
2	60	100
3	>95	5000

Performance Criterion: C & B

Test Procedure

1) The interruption is introduced at selected phase angles with specified duration.
2) Record any degradation of performance.

Test Data and Setup Photo

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

The testing was performed by Bruce Zhang 2009-01-12.

Test Mode: Talking

Level	U2	Td (ms)	Phase Angle	N	Pass	Fail
1	30%	10	0/90/180/270	3	A	/
2	60%	100	0/90/180/270	3	A	/
3	>95%	5000	0/90/180/270	3	C	/



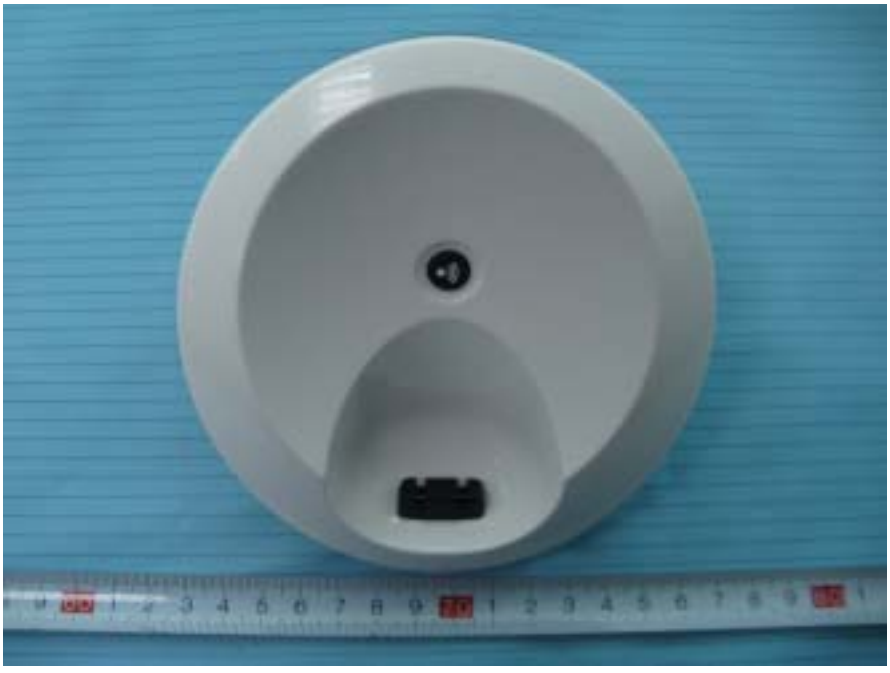
Test Setup photo

EXHIBIT A - EUT PHOTOGRAPHS

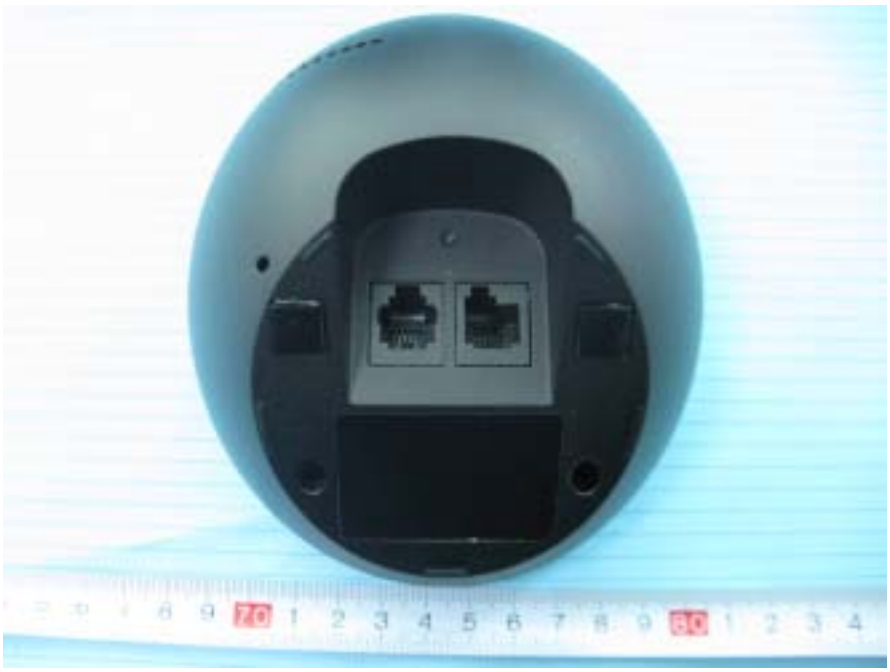
EUT - Full View



EUT - Top View



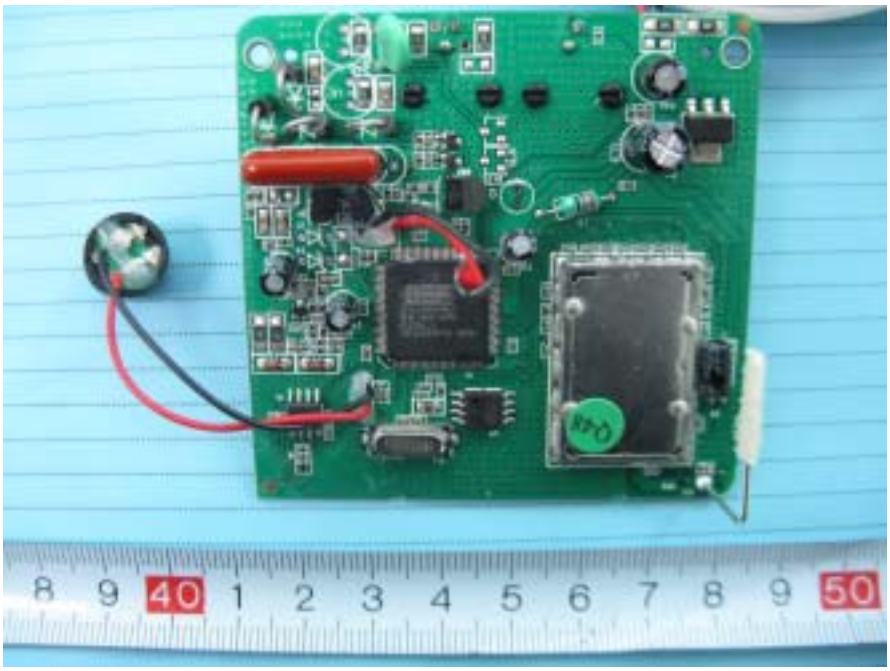
EUT - Bottom View



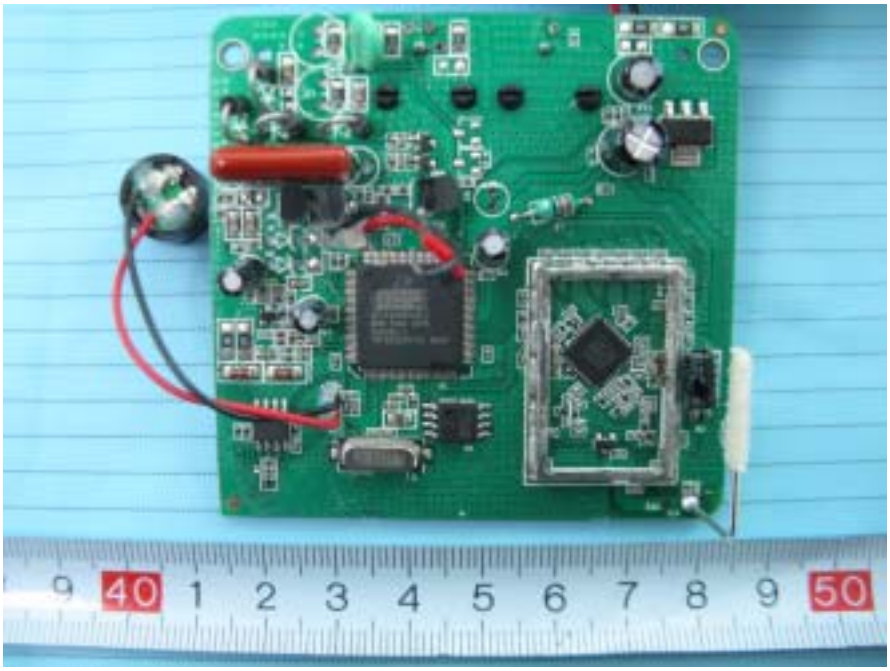
EUT - Inside View



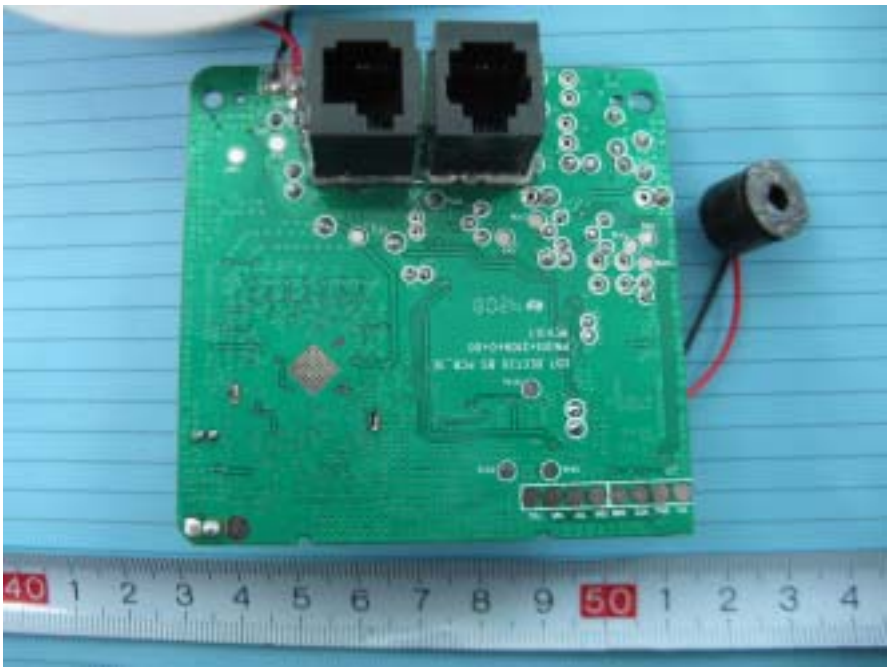
EUT - Main Board Top Components with Shield cover View



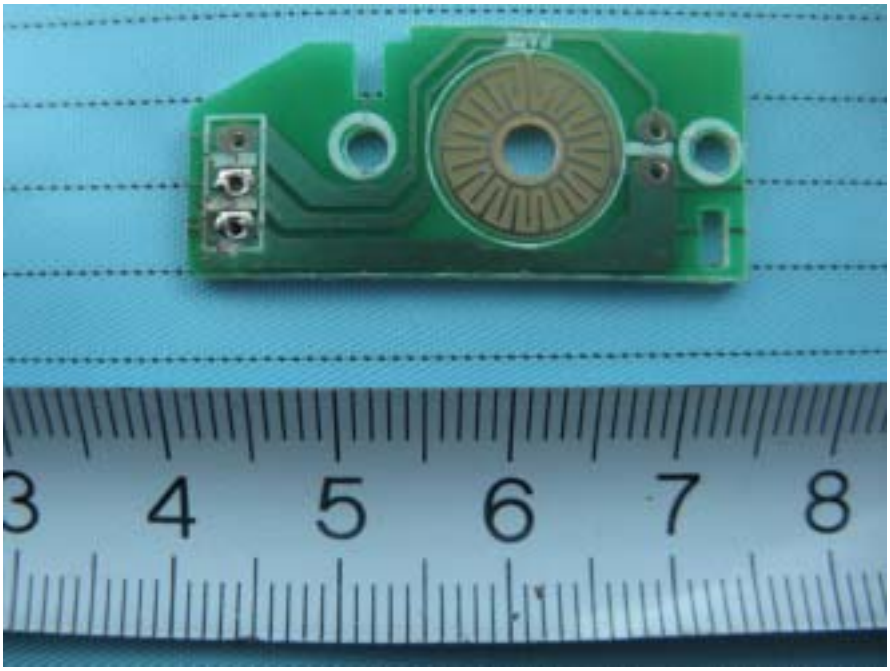
EUT - Main Board Top Components without Shield cover View



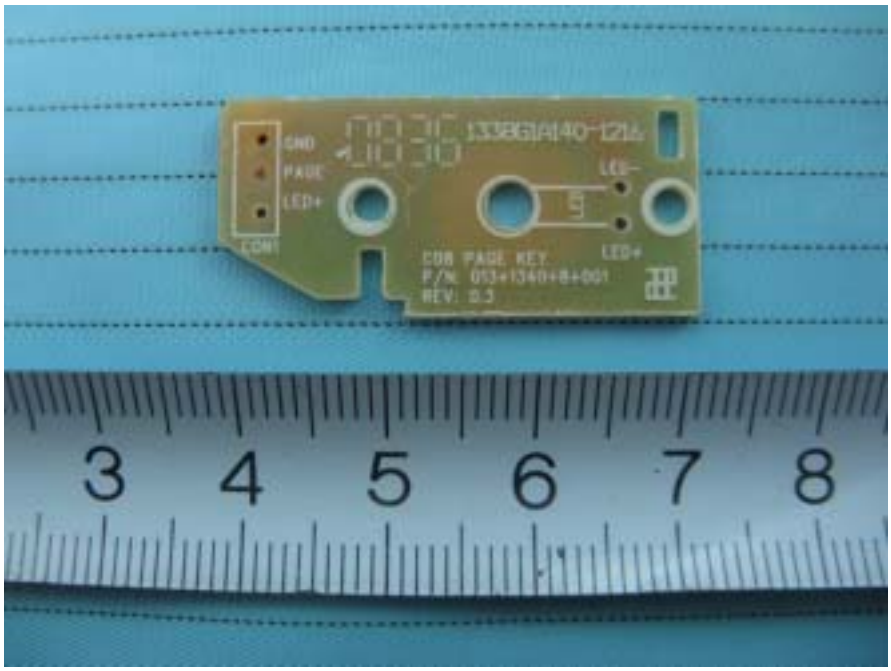
EUT - Main Board Bottom Components View



EUT - Button Board Top Circuit View



EUT - Button Board Bottom Circuit View



EUT – Adapter View



EXHIBIT B – TEST SETUP PHOTOGRAPHS

Conducted Emissions - Front View (AC Port)



Conducted Emissions - Side View (AC Port)



Conducted Emissions - Front View (RJ11 Port)



Conducted Emissions - Side View (RJ11 Port)



******* END OF REPORT *******